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## RAW SEQUENCE LISTING

DATE: 08/16/2004

PATENT APPLICATION: US/10/018,009A

TIME: 17:10:33

Input Set : N:\FATIMA\10018009.txt

Output Set: N:\CRF4\08162004\J018009A.raw

3 <110> APPLICANT: DSM N.V.

5 <120> TITLE OF INVENTION: Genes encoding enzymes in the biosynthesis of pimaricin and applications thereof

6 thereof

W--> 7 <130> FILE REFERENCE: S-2959

9 <140> CURRENT APPLICATION NUMBER: 10/018,009A

C--> 10 <141> CURRENT FILING DATE: 2001-12-14

12 <160> NUMBER OF SEQ ID NOS: 14

14 <170> SOFTWARE: PatentIn Ver. 2.1

16 <210> SEQ ID NO: 1

17 <211> LENGTH: 5544

18 <212> TYPE: DNA

19 <213> ORGANISM: Streptomyces natalensis

21 <220> FEATURE:

22 <221> NAME/KEY: CDS

23 <222> LOCATION: (1)..(5544)

25 <400> SEQUENCE: 1

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| 26 | atg | gtg | ccc | gtc | cac | aca | gat | gac | tac | gcg | atc | cag | ccg | ccc | gcc | gac | 48  |
| 27 | Met | Val | Pro | Val | His | Thr | Asp | Asp | Tyr | Ala | Ile | Gln | Pro | Pro | Ala | Asp |     |
| 28 | 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     | 15  |     |     |     |
| 30 | acc | gcg | cat | gga | ggg | ggt | ggc | ttc | aca | ctg | cct | gct | gtg | ttc | gag | gcc | 96  |
| 31 | Thr | Ala | His | Gly | Gly | Gly | Phe | Thr | Leu | Pro | Ala | Val | Phe | Glu | Ala |     |     |
| 32 |     |     |     | 20  |     |     | 25  |     |     |     | 30  |     |     |     |     |     |     |
| 34 | gcc | gtg | gaa | tcc | gcc | ccc | gac | gca | gtg | gcc | ctc | gtc | gac | ggc | acc | gtt | 144 |
| 35 | Ala | Val | Glu | Ser | Ala | Pro | Asp | Ala | Val | Ala | Leu | Val | Asp | Gly | Thr | Val |     |
| 36 |     | 35  |     |     |     |     | 40  |     |     |     | 45  |     |     |     |     |     |     |
| 38 | cct | gga | cct | ggg | cgc | atg | tgg | cgc | gca | gac | gtc | gat | gcg | ctg | gcc | cgc | 192 |
| 39 | Pro | Gly | Pro | Gly | Arg | Met | Trp | Arg | Ala | Asp | Val | Asp | Ala | Leu | Ala | Arg |     |
| 40 |     | 50  |     |     |     | 55  |     |     |     | 60  |     |     |     |     |     |     |     |
| 42 | ggg | ttg | cag | gag | tcg | ggt | atc | gca | ccc | ggt | gac | gtg | gtg | gcg | gtg | cgg | 240 |
| 43 | Gly | Leu | Gln | Glu | Ser | Gly | Ile | Ala | Pro | Gly | Asp | Val | Val | Ala | Val | Arg |     |
| 44 | 65  |     |     |     | 70  |     |     |     | 75  |     |     |     | 80  |     |     |     |     |
| 46 | ctg | ccg | aac | tgc | ggg | agg | ttt | ccc | acc | ctg | cac | ctg | gcc | gtc | gcg | gcc | 288 |
| 47 | Leu | Pro | Asn | Cys | Gly | Arg | Phe | Pro | Thr | Leu | His | Leu | Ala | Val | Ala | Ala |     |
| 48 |     |     | 85  |     |     |     | 90  |     |     |     | 95  |     |     |     |     |     |     |
| 50 | gtc | gga | gcg | gta | ctg | ctg | ccc | atc | cac | cag | ggc | acc | ccg | ctc | ccg | gag | 336 |
| 51 | Val | Gly | Ala | Val | Leu | Leu | Pro | Ile | His | Gln | Gly | Thr | Pro | Leu | Pro | Glu |     |
| 52 |     |     | 100 |     |     |     | 105 |     |     |     | 110 |     |     |     |     |     |     |
| 54 | gtc | gac | gcg | ctg | ctg | acc | cgg | gcg | gaa | ccc | gcc | ctt | ctc | gtc | ctg | tcg | 384 |
| 55 | Val | Asp | Ala | Leu | Leu | Thr | Arg | Ala | Glu | Pro | Ala | Leu | Leu | Val | Leu | Ser |     |
| 56 |     | 115 |     |     |     | 120 |     |     |     |     | 125 |     |     |     |     |     |     |
| 58 | gcc | gcc | ggg | agc | gac | ggc | ctg | gcg | acg | gcc | cgt | tcg | ctt | ctg | gag | agc | 432 |
| 59 | Ala | Ala | Gly | Ser | Asp | Gly | Leu | Ala | Thr | Ala | Arg | Ser | Leu | Leu | Glu | Ser |     |
| 60 |     | 130 |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |     |     |

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62 gtg ccg tcg ctg cgc ggc gtg ctg ctg gcc ggg gcg tcg gga gac ggg 480
63 Val Pro Ser Leu Arg Gly Val Leu Leu Ala Gly Ala Ser Gly Asp Gly
64 145 150 155 160
66 gag tcc gga tcc gtc gga ggt ggg gag tca gga tcc ggg cgt cgg tcg 528
67 Glu Ser Gly Ser Val Gly Gly Gly Glu Ser Gly Ser Gly Arg Arg Ser
68 165 170 175
70 ctg gac ggg ctg ctg gcc ggc tgg gcg ggc agc ggg ccc cgg ccg gtg 576
71 Leu Asp Gly Leu Leu Ala Gly Trp Ala Gly Ser Gly Pro Arg Pro Val
72 180 185 190
74 gac gtc acc ccc gat atg ccg ctc gtt ctc gtc ccc tcg tcc ggg acg 624
75 Asp Val Thr Pro Asp Met Pro Leu Val Leu Val Pro Ser Ser Gly Thr
76 195 200 205
78 gtc tcg gca cgg ccc aaa ctg tgt gtg cac agc cac gac ggt ctg ctg 672
79 Val Ser Ala Arg Pro Lys Leu Cys Val His Ser His Asp Gly Leu Leu
80 210 215 220
82 tcg aac acc gca gcc gtc acc gcc gag gcc gcc gac gcc ttc gac ggt 720
83 Ser Asn Thr Ala Ala Val Thr Ala Glu Ala Ala Asp Ala Phe Asp Gly
84 225 230 235 240
86 ccg gtc ctc acg gcc tgc ccg atg acc cat ctg ttc ggc ctc cag tcc 768
87 Pro Val Leu Thr Ala Cys Pro Met Thr His Leu Phe Gly Leu Gln Ser
88 245 250 255
90 ctg cac gcg gcg ctg ttc gcc gcc tgc acg cag gtc ctg ctc acc ggc 816
91 Leu His Ala Ala Leu Phe Ala Ala Cys Thr Gln Val Leu Leu Thr Gly
92 260 265 270
94 tgg gac gtg gac cgc ttc ctg gaa cag gct cgg gag cac ggc ccc cgt 864
95 Trp Asp Val Asp Arg Phe Leu Glu Gln Ala Arg Glu His Gly Pro Arg
96 275 280 285
98 gtc gtg ttc gcc gtg ccc gcc caa ctg cgg gac gtc gtg aca cga ctg 912
99 Val Val Phe Ala Val Pro Ala Gln Leu Arg Asp Val Val Thr Arg Leu
100 290 295 300
102 gcc agg acc ggc gaa ccg gcg ggc ttc acg ccg tac cag gtg cgt acc 960
103 Ala Arg Thr Gly Glu Pro Ala Gly Phe Thr Pro Tyr Gln Val Arg Thr
104 305 310 315 320
106 gcg ggg gcc gcc gtc gcg ccc gcg ctc gcc gta cgg gta cgc gcc gtc 1008
107 Ala Gly Ala Ala Val Ala Pro Ala Leu Ala Val Arg Val Arg Ala Val
108 325 330 335
110 ctc gac tgc gaa ctg gtc gtg gtg tgg ggg atg tcc gag atc ggc acc 1056
111 Leu Asp Cys Glu Leu Val Val Val Trp Gly Met Ser Glu Ile Gly Thr
112 340 345 350
114 ggc acc cgc acc cgg gcc cac cac ccc gac ggc tgt gtg gga gag ccg 1104
115 Gly Thr Arg Thr Arg Ala His His Pro Asp Gly Cys Val Gly Glu Pro
116 355 360 365
118 gtc agc ggg gtg gac gtg cgc gtc gtc gac gag cac ggc caa gag tgc 1152
119 Val Ser Gly Val Asp Val Arg Val Val Asp Glu His Gly Gln Glu Cys
120 370 375 380
122 gcg gcg gac gag agg ggt gaa ctc cag tac cgg ggg cca ggg ttg ttc 1200
123 Ala Ala Asp Glu Arg Gly Glu Leu Gln Tyr Arg Gly Pro Gly Leu Phe
124 385 390 395 400
126 cgc ggc tat ttc cgc gaa ccg gag ctg acg cgc tcg gcc ctc acc gac 1248

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 127 | Arg | Gly | Tyr | Phe | Arg | Glu | Pro | Glu | Leu | Thr | Arg | Ser | Ala | Leu | Thr | Asp |      |
| 128 |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |     |      |
| 130 | gac | ggc | tgg | ctg | cgg | acc | ggc | gat | ctc | gcg | acc | gtc | gac | gcg | gac | ggc | 1296 |
| 131 | Asp | Gly | Trp | Leu | Arg | Thr | Gly | Asp | Leu | Ala | Thr | Val | Asp | Ala | Asp | Gly |      |
| 132 |     |     |     | 420 |     |     |     |     | 425 |     |     |     |     | 430 |     |     |      |
| 134 | gtg | gtg | gtg | ctg | cac | ggc | cgg | gcg | gcc | gag | ctg | atc | aat | acg | ggg | ggc | 1344 |
| 135 | Val | Val | Val | Leu | His | Gly | Arg | Ala | Ala | Glu | Leu | Ile | Asn | Thr | Gly | Gly |      |
| 136 |     |     |     | 435 |     |     |     |     | 440 |     |     |     |     | 445 |     |     |      |
| 138 | cgg | aag | ttc | agc | gcc | ggc | gag | gtc | gag | gga | ctg | ctc | tcc | ggc | ttt | acg | 1392 |
| 139 | Arg | Lys | Phe | Ser | Ala | Gly | Glu | Val | Glu | Gly | Leu | Leu | Ser | Gly | Phe | Thr |      |
| 140 |     | 450 |     |     |     |     | 455 |     |     |     |     | 460 |     |     |     |     |      |
| 142 | gac | ctg | ggc | cgg | ctg | gcc | gtc | gtc | ggc | gca | ccg | gac | gac | cgg | ctc | ggg | 1440 |
| 143 | Asp | Leu | Gly | Pro | Leu | Ala | Val | Val | Gly | Ala | Pro | Asp | Asp | Arg | Leu | Gly |      |
| 144 | 465 |     |     |     |     | 470 |     |     |     | 475 |     |     |     |     | 480 |     |      |
| 146 | gag | tac | cgg | tgc | ctg | gtc | gtg | acc | gac | cac | gcg | gac | ggc | acc | atc | ggc | 1488 |
| 147 | Glu | Tyr | Pro | Cys | Leu | Val | Val | Thr | Asp | His | Ala | Asp | Gly | Thr | Ile | Gly |      |
| 148 |     |     |     | 485 |     |     |     |     | 490 |     |     |     |     | 495 |     |     |      |
| 150 | ctg | agc | gag | gtg | acc | gcg | ttc | ctg | cgc | cgg | ctg | ggg | ctc | gcc | gac | cac | 1536 |
| 151 | Leu | Ser | Glu | Val | Thr | Ala | Phe | Leu | Arg | Arg | Leu | Gly | Leu | Ala | Asp | His |      |
| 152 |     |     |     | 500 |     |     |     |     | 505 |     |     |     | 510 |     |     |     |      |
| 154 | aag | atc | ccc | ctc | gaa | ctg | gtc | acc | gtg | cgc | gag | ctt | ccc | ttc | tcc | cct | 1584 |
| 155 | Lys | Ile | Pro | Leu | Glu | Leu | Val | Thr | Val | Arg | Glu | Leu | Pro | Phe | Ser | Pro |      |
| 156 |     |     |     | 515 |     |     |     |     | 520 |     |     |     | 525 |     |     |     |      |
| 158 | gcc | ggg | aag | ctc | gac | cgc | ggg | gcg | ctc | aag | cgg | ctg | ctc | gcc | aac | ctt | 1632 |
| 159 | Ala | Gly | Lys | Leu | Asp | Arg | Gly | Ala | Leu | Lys | Arg | Leu | Leu | Ala | Asn | Leu |      |
| 160 |     | 530 |     |     |     |     | 535 |     |     |     |     | 540 |     |     |     |     |      |
| 162 | gcg | gag | gtg | tcc | gtt | cgg | gcc | cgt | ctc | ggc | gcg | gtc | ccg | ccc | tac | acg | 1680 |
| 163 | Ala | Glu | Val | Ser | Val | Pro | Ala | Arg | Leu | Gly | Ala | Val | Pro | Pro | Tyr | Thr |      |
| 164 | 545 |     |     |     |     | 550 |     |     |     | 555 |     |     |     |     | 560 |     |      |
| 166 | gcc | gag | gag | gcg | ctg | gac | ctc | gta | cgc | gac | tgc | gtc | ggc | cgg | gtg | ctc | 1728 |
| 167 | Ala | Glu | Glu | Ala | Leu | Asp | Leu | Val | Arg | Asp | Cys | Val | Gly | Arg | Val | Leu |      |
| 168 |     |     |     | 565 |     |     |     |     | 570 |     |     |     | 575 |     |     |     |      |
| 170 | cgt | tac | ggc | ggc | gcg | gcc | gtc | ccc | ttc | ccc | ccg | gac | aag | gac | ttc | ttc | 1776 |
| 171 | Arg | Tyr | Gly | Gly | Ala | Ala | Val | Pro | Phe | Pro | Pro | Asp | Lys | Asp | Phe | Phe |      |
| 172 |     |     |     | 580 |     |     |     |     | 585 |     |     |     | 590 |     |     |     |      |
| 174 | tcc | ccg | gac | aag | gac | ttc | cgc | cag | ctc | ggc | ctg | gac | tcc | atc | ggc | gcg | 1824 |
| 175 | Ser | Pro | Asp | Lys | Asp | Phe | Arg | Gln | Leu | Gly | Leu | Asp | Ser | Ile | Gly | Ala |      |
| 176 |     |     |     | 595 |     |     |     | 600 |     |     |     | 605 |     |     |     |     |      |
| 178 | gtg | cgg | ctg | cgg | aat | ctg | ctg | cgg | gag | gag | acc | ggg | ctg | ccg | ctc | ccg | 1872 |
| 179 | Val | Arg | Leu | Arg | Asn | Leu | Leu | Arg | Glu | Glu | Thr | Gly | Leu | Pro | Leu | Pro |      |
| 180 |     | 610 |     |     |     |     | 615 |     |     |     |     | 620 |     |     |     |     |      |
| 182 | gcc | acc | ctg | gcc | ttc | gac | tcc | ccc | act | ccg | cga | gcc | gtc | gcg | cgc | gtc | 1920 |
| 183 | Ala | Thr | Leu | Ala | Phe | Asp | Ser | Pro | Thr | Pro | Arg | Ala | Val | Ala | Arg | Val |      |
| 184 | 625 |     |     |     |     | 630 |     |     |     | 635 |     |     |     |     | 640 |     |      |
| 186 | ctg | gcc | gag | cag | gag | gag | ccg | tcc | cag | gac | gag | ccg | agg | gag | aac | ccg | 1968 |
| 187 | Leu | Ala | Glu | Gln | Glu | Pro | Ser | Gln | Asp | Glu | Pro | Arg | Glu | Asn | Pro |     |      |
| 188 |     |     |     | 645 |     |     |     |     | 650 |     |     |     | 655 |     |     |     |      |
| 190 | gcg | gac | ggg | gcc | gac | ccg | gtg | gcg | atc | gtg | ggc | atg | gcc | tgc | cgg | ctg | 2016 |
| 191 | Ala | Asp | Gly | Ala | Asp | Pro | Val | Ala | Ile | Val | Gly | Met | Ala | Cys | Arg | Leu |      |

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| 192 |   | 660 |     | 665 |     | 670 |     |      |
| 194 | ccg ggc gga gcc gac tcc ccc gac gcc ctg tgg gag ctg ctc gcc gac |     |     |     |     |     |     | 2064 |
| 195 | Pro Gly Gly Ala Asp Ser Pro Asp Ala Leu Trp Glu Leu Leu Ala Asp |     |     |     |     |     |     |      |
| 196 |   | 675 |     | 680 |     | 685 |     |      |
| 198 | ggg acc gac gcg atg tcc ccc ttc ccc acg gac cgc ggc tgg gac ctg |     |     |     |     |     |     | 2112 |
| 199 | Gly Thr Asp Ala Met Ser Pro Phe Pro Thr Asp Arg Gly Trp Asp Leu |     |     |     |     |     |     |      |
| 200 |   | 690 |     | 695 |     | 700 |     |      |
| 202 | gac cgg ctg ttc gac gag gat gcc gac cgc ccg ggt acc tcg tac gcc |     |     |     |     |     |     | 2160 |
| 203 | Asp Arg Leu Phe Asp Glu Asp Ala Asp Arg Pro Gly Thr Ser Tyr Ala |     |     |     |     |     |     |      |
| 204 | 705   |     | 710 |     | 715 |     | 720 |      |
| 206 | cgc gaa ggc ggc ttc ctg cac gac gcg ggc gac ttc gac gcg ggc ttc |     |     |     |     |     |     | 2208 |
| 207 | Arg Glu Gly Gly Phe Leu His Asp Ala Gly Asp Phe Asp Ala Gly Phe |     |     |     |     |     |     |      |
| 208 |   | 725 |     | 730 |     | 735 |     |      |
| 210 | ttc ggc ctg tcg gac cag gag gcg acg gcg acc gat ccg cag cag cgg |     |     |     |     |     |     | 2256 |
| 211 | Phe Gly Leu Ser Asp Gln Glu Ala Thr Ala Thr Asp Pro Gln Gln Arg |     |     |     |     |     |     |      |
| 212 |   | 740 |     | 745 |     | 750 |     |      |
| 214 | ctg ctt ctg gag gcg gcc tgg gag acc ttc gag cgg gcg ggc atc gac |     |     |     |     |     |     | 2304 |
| 215 | Leu Leu Leu Glu Ala Ala Trp Glu Thr Phe Glu Arg Ala Gly Ile Asp |     |     |     |     |     |     |      |
| 216 |   | 755 |     | 760 |     | 765 |     |      |
| 218 | ccg cag tcc ctg agg gga agc cgt acg ggc gtg ttc acg ggc gcg atg |     |     |     |     |     |     | 2352 |
| 219 | Pro Gln Ser Leu Arg Gly Ser Arg Thr Gly Val Phe Thr Gly Ala Met |     |     |     |     |     |     |      |
| 220 |   | 770 |     | 775 |     | 780 |     |      |
| 222 | gac cgc ggc tat gga acc agc gcg tcc gcc gcg ccc agc gca tgg gag |     |     |     |     |     |     | 2400 |
| 223 | Asp Arg Gly Tyr Gly Thr Ser Ala Ser Ala Ala Pro Ser Ala Trp Glu |     |     |     |     |     |     |      |
| 224 | 785   |     | 790 |     | 795 |     | 800 |      |
| 226 | agc atg ctc atc acc ggg acc gcc ggc agc gcg gtc tcg ggg cgc atc |     |     |     |     |     |     | 2448 |
| 227 | Ser Met Leu Ile Thr Gly Thr Ala Gly Ser Ala Val Ser Gly Arg Ile |     |     |     |     |     |     |      |
| 228 |   | 805 |     | 810 |     | 815 |     |      |
| 230 | gcc tac acc tac ggg ctc gaa ggc ccc gcg ctg acg gtc gac acc gcc |     |     |     |     |     |     | 2496 |
| 231 | Ala Tyr Thr Tyr Gly Leu Glu Gly Pro Ala Leu Thr Val Asp Thr Ala |     |     |     |     |     |     |      |
| 232 |   | 820 |     | 825 |     | 830 |     |      |
| 234 | tcc tcg tcc tcc ctc gtc gcc ctg cat ctg gcc tgc cgg tcg ctg cgc |     |     |     |     |     |     | 2544 |
| 235 | Ser Ser Ser Ser Leu Val Ala Leu His Leu Ala Cys Arg Ser Leu Arg |     |     |     |     |     |     |      |
| 236 |   | 835 |     | 840 |     | 845 |     |      |
| 238 | tcg ggc gag acc gac ctg gcg ctg gcc ggc ggc gtc acc gtc atg gcg |     |     |     |     |     |     | 2592 |
| 239 | Ser Gly Glu Thr Asp Leu Ala Leu Ala Gly Gly Val Thr Val Met Ala |     |     |     |     |     |     |      |
| 240 |   | 850 |     | 855 |     | 860 |     |      |
| 242 | acc ccg gcg ccc ttc gca cac ttc tcc ccg ctg cgc gcg ctg tcc ccc |     |     |     |     |     |     | 2640 |
| 243 | Thr Pro Ala Pro Phe Ala His Phe Ser Arg Leu Arg Ala Leu Ser Pro |     |     |     |     |     |     |      |
| 244 | 865   |     | 870 |     | 875 |     | 880 |      |
| 246 | gac tcc cgc tcc atg gcg tac gcg gac gcc gcg aac ggc tcg gcg tgg |     |     |     |     |     |     | 2688 |
| 247 | Asp Ser Arg Ser Met Ala Tyr Ala Asp Ala Ala Asn Gly Ser Ala Trp |     |     |     |     |     |     |      |
| 248 |   | 885 |     | 890 |     | 895 |     |      |
| 250 | tcg gag ggc gcg ggg ctg ctt ctg ctg gag ccg ctg agc gac gcc ccg |     |     |     |     |     |     | 2736 |
| 251 | Ser Glu Gly Ala Gly Leu Leu Leu Leu Glu Arg Leu Ser Asp Ala Arg |     |     |     |     |     |     |      |
| 252 |   | 900 |     | 905 |     | 910 |     |      |
| 254 | cgc aac gga cac cgt gtc ctg gcg ctc gta ccg ggc tcc gcc gtg aat |     |     |     |     |     |     | 2784 |
| 255 | Arg Asn Gly His Arg Val Leu Ala Leu Val Arg Gly Ser Ala Val Asn |     |     |     |     |     |     |      |
| 256 |   | 915 |     | 920 |     | 925 |     |      |

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258 cag gac ggc gcc tcc aac ggg ctc acc gcg ccg agc gga ccc gca cag 2832
259 Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Ser Gly Pro Ala Gln
260 930 935 940
262 cag cgc gtc atc cgc cag gcc ctg gcc gac gcc ggg ctg acg ccg cag 2880
263 Gln Arg Val Ile Arg Gln Ala Leu Ala Asp Ala Gly Leu Thr Pro Gln
264 945 950 955 960
266 gac gtg gac gcc gtg gag ggg cac ggc acc ggc acg ccg ctc ggc gac 2928
267 Asp Val Asp Ala Val Glu Gly His Gly Thr Gly Thr Pro Leu Gly Asp
268 965 970 975
270 ccc atc gag gcg cag gcg ctg ctg gcc acg tac ggc caa cag ccg cct 2976
271 Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Gln Arg Pro
272 980 985 990
274 gtg gaa cgg ccg ttg tgg ctg ggg tcg gtg aag tcg aac ttc ggg cac 3024
275 Val Glu Arg Pro Leu Trp Leu Gly Ser Val Lys Ser Asn Phe Gly His
276 995 1000 1005
278 aca caa gcc gcc gcc ggg gtc gtc ggc gtc atc aag acg gtg ctc gcg 3072
279 Thr Gln Ala Ala Ala Gly Val Val Gly Val Ile Lys Thr Val Leu Ala
280 1010 1015 1020
282 ctg cgc cac ggc gtc ctg ccg cag acg ctg cac gtg gac gct ccc tcg 3120
283 Leu Arg His Gly Val Leu Pro Gln Thr Leu His Val Asp Ala Pro Ser
284 1025 1030 1035 1040
286 gcc aag gtg gac tgg tcc gcc ggt tcg gta cgg ctg ctg acc gag gcg 3168
287 Ala Lys Val Asp Trp Ser Ala Gly Ser Val Arg Leu Leu Thr Glu Ala
288 1045 1050 1055
290 cgg ccc tgg cca cgg gag agc gga cgt acg cgc cgg gcg ggg gtg tcc 3216
291 Arg Pro Trp Pro Arg Glu Ser Gly Arg Thr Arg Arg Ala Gly Val Ser
292 1060 1065 1070
294 tcg ttc ggg ctc acc ggc acc aac gcg cac gtg atc ctg gag gag gcg 3264
295 Ser Phe Gly Leu Thr Gly Thr Asn Ala His Val Ile Leu Glu Glu Ala
296 1075 1080 1085
298 ccg gga gag gcg gcg gca ggg gcg cgg gcc gag gtt ccc gag gag gcg 3312
299 Pro Gly Glu Ala Ala Ala Gly Ala Arg Ala Glu Val Pro Glu Glu Ala
300 1090 1095 1100
302 cgg tgc gcc tcc tca ccg gct cga ctc ccg gag ccg ccc ggc gac gcg 3360
303 Arg Cys Ala Ser Ser Pro Ala Arg Leu Pro Glu Pro Pro Gly Asp Ala
304 1105 1110 1115 1120
306 gcc gcg ccc tgg gtg ctg tcc gcc cgg agc cgg gcg gcg ctg cgc gcg 3408
307 Ala Ala Pro Trp Val Leu Ser Ala Arg Ser Arg Ala Ala Leu Arg Ala
308 1125 1130 1135
310 cag gcg ctc cgc ctg gcc gac cag gtg gcc gcc gac ccc ggt cta cgg 3456
311 Gln Ala Leu Arg Leu Ala Asp Gln Val Ala Ala Asp Pro Gly Leu Arg
312 1140 1145 1150
314 gcc cag gat gtc gcc cat gcc ctg gcc acc tcc cgt acc ctg cac ccg 3504
315 Ala Gln Asp Val Ala His Ala Leu Ala Thr Ser Arg Thr Leu His Arg
316 1155 1160 1165
318 cac cgg gcc gtc gtc agc ggc tcc gac cgg gca caa atg ctc gcc gcg 3552
319 His Arg Ala Val Val Ser Gly Ser Asp Arg Ala Gln Met Leu Ala Ala
320 1170 1175 1180
322 gca aag cgg ttc ggg ctc ggt gag cgg acc gcg ggc gtc acc ccg gac 3600

```

**VERIFICATION SUMMARY**

DATE: 08/16/2004

PATENT APPLICATION: US/10/018,009A

TIME: 17:10:34

Input Set : N:\FATIMA\10018009.txt

Output Set: N:\CRF4\08162004\J018009A.raw

L:7 M:283 W: Missing Blank Line separator, <130> field identifier

L:10 M:271 C: Current Filing Date differs, Replaced Current Filing Date